

# Trend in minimum inhibitory concentrations of bacteraemic *Escherichia coli* over 8 years, at Aberdeen Royal infirmary

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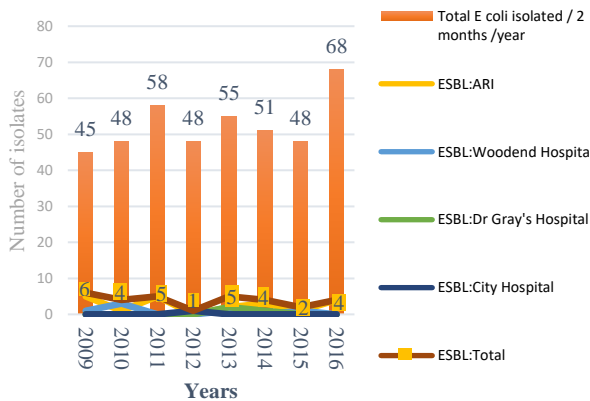
**Introduction:** A knowledge of antibiotic sensitivity patterns of common bacteraemic isolates is essential in updating the local empiric antibiotic prescribing guidelines.

**Methodology:** *E. coli* isolates from blood cultures received to the microbiology laboratory, Aberdeen Royal Infirmary (ARI), in June and July each year between 2009 to 2016 were analyzed retrospectively.

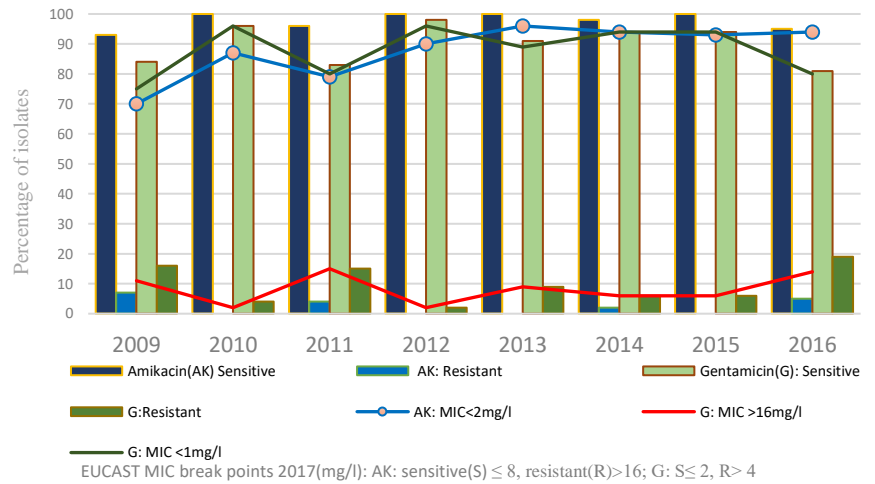
- Antibiotic sensitivity [Minimum Inhibitory Concentrations(MIC)] was performed by Vitek 2 (bioMérieux) system and interpreted with the EUCAST MIC break point 2017 version 7.1.

## Results:

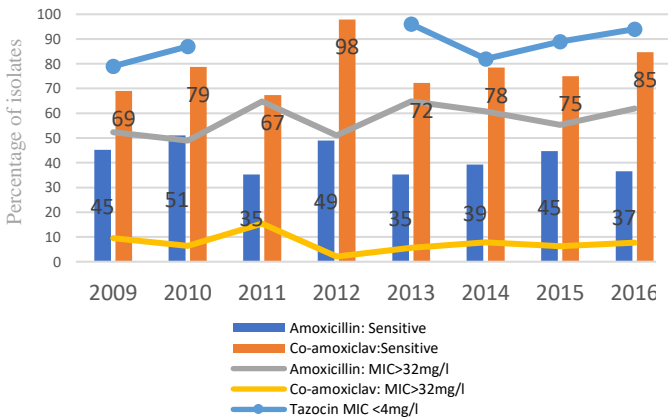
Total & ESBL producing isolates/June and July/year



Aminoglycoside sensitivities

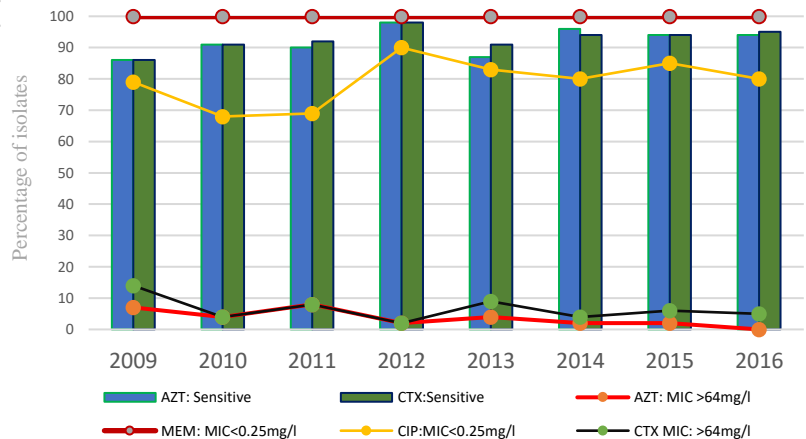


Amoxicillin, Co-amoxiclav and Piperacillin TazobactamT(azocin) sensitivities



EUCAST MIC break points 2017 (mg/l): Amoxicillin/ Co-amoxiclav: S≤8, R>8 ; Tazocin: R>0.5

Aztreonam(AZT), Cefotaxime(CTX), Meropenem(MEM) and Ciprofloxacin (CIP) sensitivities



EUCAST MIC breakpoints 2017 (mg/l): CIP: S≤0.25; S≤8, R>16; CTX: S≤1, r>2; MEM: S≤2, r>8 ; AZT: S≤1, r>4

## Discussion:

- Over 80% of isolates were sensitive to gentamicin.
- The highest resistance was seen for amoxicillin, constant at around 50% over the study period.
- The percentage of isolates susceptible to Co-amoxiclav ranged between 69-85% with percentage having MIC >32mg/l is fairly constant around 6-8%.
- During the tested years MIC of piperacillin tazobactam was <4mg/l among 80% isolates.
- Considering the large increase in gentamicin and tazocin use coincident with large decrease in co-amoxiclav use during the study period, the stability of resistance rates may be considered remarkable.
- Aztreonam, cefotaxime and meropenem showed a very good activity with > 85%, >85% and 100% sensitive respectively.
- MIC of meropenem was 0.25mg/l for all the isolates.
- There were no carbapenemase producing *E. coli*.
- Ciprofloxacin sensitivity with MIC of <0.25 mg/l was ranging in 80% of the isolates.
- Ciprofloxacin and cefotaxime use decreased markedly and aztreonam increased during the study period. Meropenem use was stable.
- Interestingly, the percentage of ESBL producing *E. coli* were highest (13%) in 2009 , lowest (2%) in 2012 and ranged 4-9% in rest of the 6 years studied.

## Conclusions:

- The sample of *E. coli* isolates from blood cultures over the last 8 years shows a good susceptibility to antibiotics tested except for amoxicillin.
- Overall, there was no apparent trend of increase in resistance or MIC creep noted with any of the antibiotics tested.
- Analysis of total *E. coli* isolates in each year would necessary to obtain ESBL and other resistance rates.